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10/070,721	07/16/2002	Philip Hall	THC.P.US0003	9695

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EXAMINER

CHORBAJI, MONZER R

ART UNIT

PAPER NUMBER

1744

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/070,721

Applicant(s)

HALL, PHILIP

Examiner

MONZER R. CHORBAJI

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This non-final action is in response to the RCE/Amendment received on 02/09/05 and 03/03/05.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-4 and 6-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pellin (U.S.P.N. 4,102,654) in view of Liebeskind et al (U.S.P.N. 6,632,805) and further in view of Doushita et al (U.S.P.N. 6,576,344).

With respect to claims 1, 6 and 14, the Pellin reference discloses a method (columns 2-3) and an apparatus (1) for purifying air including the following: withdrawing air from an enclosed space (col.3, lines 56-63) through an air extraction vent (2) by using means (6, fan system), ducting for connecting all the components (unlabeled duct lines), passing the air over surfaces impregnated with an antimicrobial agent (col.2, lines 31-34, the surfaces of filter 5), through UV radiation section (col.2, lines 53-55, an

ultraviolet illumination section), and returning the air to the enclosed space (3). In addition, the apparatus includes an airflow conditioning section (5). However, with respect to claims 1 and 6, the Pellin reference fails to disclose coating the surfaces of the ultraviolet radiation section with a non-volatile antimicrobial agent and with respect to claim 14, the Pellin reference fails to teach coating the surfaces of the ultraviolet radiation section and the air flow conditioning section with a non-volatile antimicrobial agent. With respect to claims 1, 6 and 14, the Liebeskind reference, which is in the art of designing antimicrobial coatings (abstract), teaches incorporating antimicrobial organosilanes, for example, 3-(trimethoxysilyl)-propyl dimethyloctadecyl ammonium chloride (col.32, lines 65-67 and col.33, lines 1-7, this compound is considered to be the non-volatile antimicrobial agent) into coating applications that includes filters (i.e., air flow conditioning section, col.33, lines 24-27). As a result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the antimicrobial agent disclosed in the Pellin reference by the non-volatile antimicrobial agent as taught by the Liebeskind reference since such an agent is non-toxic, non-flammable, simple, economical and operable over a wide variety of pH ranges (col.5, lines 7-10).

With respect to claims 1, 6 and 14, the Liebeskind reference fails to teach coating surfaces of the ultraviolet section with a non-volatile antimicrobial agent. The Doushita reference, which is in the art of designing photocatalytic multi-layer coats, teaches incorporating organosilanes (this compound is considered to be the non-volatile antimicrobial agent) into an adhesion prevention layer (col.14, lines 41-67, col.15, lines

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2-15, lines 19-52 and col.17, lines 34-56). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and apparatus of the Pellin reference by coating the ultraviolet section with an organosilanes layer as taught by the Doushita reference since organosilanes layer will decompose by ultraviolet light and in the final stage, a monomolecular-equivalent layer of SiOx will be formed to maintain the anti-soiling property (col.17, lines 51-56).

With respect to claims 2-3, 7-8 and 15-18, the Pellin reference teaches the following: filtering the withdrawn air (4), causing turbulence to the air flow prior to passing the withdrawn air through ultraviolet radiation section (6), a pre-sterilization section (unlabeled region that include parts 4-6 and 7', 7"), the airflow conditioning includes a filter (unlabeled section includes 5), the filter includes natural fibers (4 and col.2, lines 30-31), airflow conditioning section includes a fixed, multi-bladed directional fan (6) and the airflow conditioning section further includes planar members (intrinsic edges of filter 5) positioned at an angle (90 degrees) to the air flow (perpendicular to 5).

With respect to claims 4, 9-13 and 19-20, the Pellin reference fails to teach coating internal surfaces of the filter or some of the internal surfaces of the pre-sterilization section with a quaternary amine group in a silane such as 3-(trimethoxysilyl)-propyl dimethyloctadecyl ammonium chloride; however, the Liebeskind reference teaches coating surfaces of a filter with 3-(trimethoxysilyl)-propyl dimethyloctadecyl ammonium chloride (for example, a quaternary amine group in a silane, col.32, lines 65-67 and col.33, lines 1-7) and further coating surfaces of HVAC systems (col.36, lines 32-35) such that the pre-sterilization section of the Pellin

reference is included in this teaching. Clearly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the antimicrobial agent disclosed in the Pellin reference by the 3-(trimethoxysilyl)-propyl dimethyloctadecyl ammonium chloride compound as taught by the Liebeskind reference since such an antimicrobial compound is non-toxic, non-flammable, simple, economical and operable over a wide variety of pH ranges (col.5, lines 7-10).

Response to Arguments

4. Applicant's arguments with respect to claims 1-4 and 6-20 have been considered but are moot in view of the new ground(s) of rejection.

On page 6 of the Remarks section, applicant argues that, "Modifying the wet filter of the '654 patent by coating it with an organosilane and then drying the filter would change the principle of operation of the wet filter, and therefore to do so would not be obvious to one of ordinary skill in the art." The examiner disagrees. The Pellin reference teaches that filter 5 can either be impregnate with water or bactericidal liquid and that is the reason it is called wet (col.2, lines 32-33). By substituting the bactericidal liquid with the non-volatile antimicrobial agent of the Liebeskind reference, the principle operation of the filter remains the same since the coat of the Liebeskind reference includes an antimicrobial agent. See column 3, lines 19-20, where the Pellin reference teaches that the function of filter 5 is antibacterial.

The newly applied Doushita reference, which is in the art of designing photocatalytic multi-layer coats, teaches incorporating organosilanes (this compound is considered to be the non-volatile antimicrobial agent) into an adhesion prevention layer (col.14, lines

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41-67, col.15, lines 2-15, lines 19-52 and col.17, lines 34-56), which is illuminated by a UV source.

On page 7 of the Remarks section, applicant argues that, "One of ordinary skill in the art would understand that, if the surfaces of the Venturi were modified by coating the surfaces with an organosilanes, that modification may interfere with the ability of the Venturi to emit electrons." The newly Doushita reference, illuminates an organosilanes layer with UV light. The UV light inherently generates ions without affecting the function of the organosilanes compounds. Applicant argues that such a modification will interfere with the ability of the Venturi to emit electrons without providing evidence.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Goswami reference (U.S.P.N. 5,933,702) teaches coating internal surfaces of UV section with photocatalytic compounds. The Smith reference (WO 92/20974) teaches the concept of placing tubular structure in order to promote air turbulence and the Eo Ong reference (GB 2,212,370) teaches using activated carbon filter.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONZER R. CHORBAJI whose telephone number is (571) 272-1271. The examiner can normally be reached on M-F 6:30-3:00.

7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN KIM can be reached on (571) 272-1142. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Monzer R. Chorbaji *MRC*
Patent Examiner
AU 1744
04/26/2005

John Kim
JOHN KIM
SUPERVISORY PATENT EXAMINER